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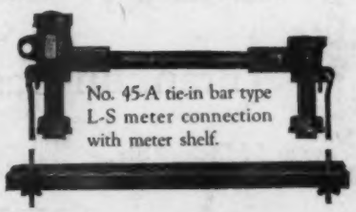

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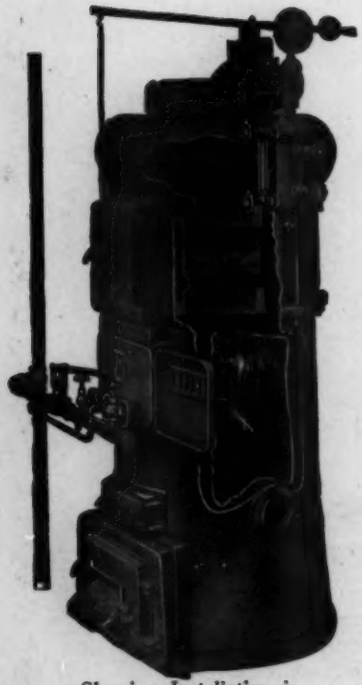

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SIXTY-SEVENTH YEAR

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Fuel of the Future--What Shall It Be?

XXXI. Heating operations in the non-ferrous metals industry

Ismar Ginsberg

IN the preceding article of this series, the description of various types of brass melting furnaces, of the design of the furnace and the manner in which the fuel is burned in it, was finished. It is now our task to discuss certain furnace data, that is obtained from the literature and that shows what results can be obtained in the operation of these furnaces with different kinds of fuels. This will give the reader some idea of the general efficiency of the furnace as well as of the effectiveness of the heating operation itself from the strictly thermal standpoint.

Use of Producer Gas

However, it may first be of interest to describe another and final type of furnace which is heated with producer gas. The importance of this type of furnace lies mainly in the fact that it uses a gas of very low cost. It is not a type of furnace that is now used in the brass melting industry to any great extent, but it may well be that the advantages that are offered by it may lead to its greater use in this field. At any rate, it brings up for consideration the question of fuel cost, for it is a fact that as the price of anthracite and coke increases, the brass melting industry will seek to find other fuels for use in its furnaces. Fuel oil cannot be used for this purpose for the same reason, as the rise in the cost of this fuel is likely to be even more accentuated than in the others, just as soon as real conservation of petroleum resources becomes an actual fact, and in accordance with the best-informed experts on this subject, such a contingency is now indicated for the immediate future.

The question naturally is what fuel will be used in the place of coal, oil and coke; and, of course, it is the aim of the gas men to see to it that the brass industry looks with favor upon gaseous fuel. The gas man desires the brass melter to use central station gas fuel, and not fuel made in producer installations right on the plant. It, however, remains a fact that producer gas, when made on a large scale, is a cheaper fuel than central station gas, but there will be but very few brass melters that will be large enough and progressive enough to install a gas producer for making the fuel to use in their brass melting furnaces.

Buying or Making Gas

It must also be remembered that there are the additional features of the investment and maintenance and operation of the producer plant to be taken into consideration. It has been found in certain cases, where manufacturers in industries, which require a large amount of gas for operating furnaces, etc., that the costs involved and the trouble and attention that are required to give efficient operation of a producer plant were more than enough to convince the manufacturer that it would be to his advantage to buy gas from the gas plant rather than to make it himself. It is most generally found that the manufacturer, whether he is a brass melter or a heat treater on a large scale, has enough to do to understand the technical details of his own business, without bothering with those involved in the manufacture and purification of gas. There are of course certain cases, which are exceptions to this rule, and these are to be found in the steel industry and perhaps in the glass industry as well. But by far the greater majority of manufacturers will be glad to purchase central station fuel at the proper price instead of making gas themselves.

Furnace Data

According to Bulletin 73 issued by the Bureau of Mines, it has been possible to collect certain valuable data on the comparative operation of furnaces used for brass melting, which data will of course be of considerable interest to the industrial gas engineer. However, it has also been found that a great deal of the data, contained in the literature, has been of little use because of lack of information on certain important details. It is understandable, for example, that such data cannot be of any great importance, if the composition of the brass alloy melted is not given, or if the size of the furnace is omitted. But what has been given in the aforementioned bulletin is useful in forming a guide on the comparative performance of the different types of furnaces, heated with different fuels, that are used for brass melting.

As far as the natural draft pit furnaces which are fired with coke are concerned, it is stated that losses of metal in melting red brass ingots was from three to four per cent, and that the fuel consumption per hundred pounds of the metal was 70 to 95 pounds of coke. On red brass turnings the loss was between four to five per cent and on yellow brass the loss was five to six per cent. The differences in the losses of metal in one and the same furnace are due of course to the different proportions of zinc in the batch, for zinc is the volatile element which goes out of the stack in the form of vapor at the high temperatures at which the melting furnaces are operated.

Other figures are also available. Thus, the loss in yellow brass consisting of 87 per cent heavy scrap and 13 per cent chips was 3.5 per cent and in the case of one hundred per cent heavy scrap and one hundred per cent chips the loss was eight per cent. Fuel figures also vary, being given as anywhere from 25 to 75 pounds of coke per hundred pounds of metal.

Forced Draft Pit Coke Furnaces

As far as the fuel consumption is concerned in this case, it is variously reported that the pounds of coke per hundred pounds of metal will vary from 30 to 32.5. The loss of metal is indicated to be only one per cent on heavy scrap and 1.5 per cent on borings.

Natural Draft Pit Anthracite Furnaces

In this case one investigator writes that on material consisting of 75 per cent heavy alloy and 25 per cent borings the melting loss is 3.5 to 4 per cent, and the fuel consumption fifty pounds of hard coal per hundred pounds of metal melted. On red brass the fuel consumption is given as 65 to 95 pounds of hard coal, and on yellow brass it is as low as 33 pounds. It is also stated that in melting yellow brass the loss is as high as six per cent of the zinc used, which is equivalent to two per cent on the entire melt. Just for comparison, in the case of bronze melting, in which tin is used, the coke consumption of the furnace was found to vary from 75 to 83 pounds per hundredweight and the melting loss from 0.9 to 1.1 per cent on the new bronze which consisted of ninety per cent of copper and ten per cent of tin.

Forced Draft Tilting Coke Furnaces

The fuel consumption in this type of furnace appears to be much lower than in the types that have been studied up to the present time. In a test made on pure copper it was found that the average coke consumption was 27 pounds per hundredweight of metal being melted. As far as brass and bronze are concerned, the fuel consumption of the same furnace was stated to be as low as seventeen pounds. On red brass it was claimed that the consumption was as low as six pounds per hundredweight.

It is a fact of course that the utilization of waste heat has the effect of decreasing to a great extent the consumption of fuel in a melting furnace. In another style of furnace of this general type, where heat recuperation was practiced, the fuel consumption was as low as fifteen to twenty-five pounds of coke per hundredweight of metal.

Metal Loss Figures

Just as in the other cases there is a great variety of data available on the fuel consumption and metal losses in the forced draft tilting coke furnace and it is hard to strike an average. The metal losses, however, are small, being as low as 2.8 per cent in the case of yellow brass consisting of 87 per cent of heavy scrap and 13 per cent of borings, seven per cent on 100 per cent chips and 2.75 per cent on 100 per cent heavy yellow scrap and one per cent on yellow ingot.

We are going into detail on this subject with the intent purpose of impressing on the mind of the industrial gas engineer, who is studying the application of gaseous fuel to brass and similar alloy melting, that he is up against a proposition that requires very careful consideration of all details. It is not sufficient to be told that the fuel consumption or the loss of metal in a certain type of furnace, heated with one fuel or another outside of gas, is so much and so much. This information is of absolutely no value and he will be misled by it very badly, if he does not ask for detailed information on the composition of the metal employed, the kind of metal, the size of the crucible and other important details. It is not possible to arrive at an equitable conclusion in this matter unless such information is available, and it is useless to give figures unless they are properly defined.

Pit Oil Furnaces

We are now ready to consider the question of the consumption of oil and the losses in the furnaces that burn oil fuel. In the first case, there are the oil pit furnaces. For example, it is said that in a pit furnace, which handles a forty-pound charge, the fuel consumption was three gallons of oil per hundredweight of metal, and the melting loss was 1.5 per cent. On the other hand, the consumption of oil in brass melting is given as 1.8 gallons per hundredweight. Other figures vary from 2 to 2.5 gallons of oil per hundredweight. These figures refer to the straight pit type of furnace.

The Tilting Furnace

As far as the tilting type is concerned, the same confusion in figures occurs. In one case the oil consumption is given as 1.75 gallons per hundred pounds, the furnace handling four hundred pound heats. The consumption is as high as 3.75 gallons per hundredweight in the case of red brass and gun metal, which contains twelve per cent of borings. The loss in this case was 4.6 per cent, and this loss included such foundry losses as grinding, as well as the loss in melting. Some interesting figures are given on 5,300 pounds of various bronzes which are melted in a German tilting, oil-fired crucible furnace, using an air pressure of about seven pounds per square inch and taking 660 pounds of metal in a single charge. The oil consumption was approximately two pounds per hundredweight of metal and the melting losses ranged from 0.2 to 1.13 per cent and averaged around 0.7 per cent. This is of course very small.

Better Efficiency in Oil-Fired Furnace

In general, it is evident that the losses of metal in the case of the oil-fired furnace, whether it is of the tilting or pit type, are less than in the furnaces that are fired with the aid of coke or coal fuel. This may be laid to the fact that oil is a superior fuel to coke or coal and that it is much easier to regulate the temperature in the oil-fired furnace than it is in the coal or coke-fired furnace.

Attention should again be called to the necessity of securing all facts before an equitable comparison can be made. The kind of oil used is also important, and if an accurate comparison is to be made, it is of course necessary to know the thermal value of the oil and of the coal as well. In fact, as has been said before, there appears to be so much doubt as to what the fuel consumption and metal losses are in an average furnace of one type or another that it would be very well to give as little credence as possible to reported results, unless the exact conditions under which the thermal efficiency tests were made were accurately known. The figures that we have given so far are only to indicate in an approximate manner what consumptions and metallic losses are incurred in the operation of these different types of furnaces.

Tilting Open-Flame Oil Furnaces

In one type of this furnace the capacity varies from 450 up to 2,700 pounds. The oil consumption is from one and one-half to two gallons per hundredweight of metal. There does not appear to be any great variation in oil consumption as the capacity of the furnace increases, for in the case of furnaces of 30,000 pounds capacity the oil consumption is 1.25 pounds per hundredweight, while in the case of a 100-pound furnace the consumption is two gallons per hundred pounds of metal. The melting loss is only half a per cent in this type of furnace, when the material consists of 85 per cent copper, 3.5 per cent of zinc, 12.5 per cent of tin and 0.5 per cent of lead.

However, it is possible for the fuel consumption to vary not only with the capacity and type of furnace, but also with the kind of material that is melted in it. Thus, for example, when running on material that consists of one-sixth borings (red brass), the oil consumption is three gallons per hundredweight of metal.

Soft Metal Melting Furnace

The fuel consumption figures seem to vary around two per cent for small charges and to go to as low as 1.5 to 1.25 per cent in the case of large charges. The losses of metal are again dependent on the character of the material that is being melted and are considerably less than those that are incurred in the furnaces that are heated with coke.

Reverberatory Coal Furnaces

The consumption of coal in a four-ton reverberatory was found to be 30 to 35 pounds per hundredweight of metal and the loss of metal varied from six to eight per cent. When the alloy melted consisted of ninety per cent copper and ten per cent tin (new metal), then the melting loss was found to be only 316 per cent but the coal consumption was as high as eighty pounds per hundredweight of metal. It is a fact that the loss of zinc in a reverberatory is apt to be so high that the furnace cannot be economically used for melting alloys which contain a considerable zinc content. It is then far better to use the crucible type of furnace. On the other hand, the reverberatory is well suited for melting large masses of metal.

Gas-Fired Furnaces

There are not nearly so many figures to be gleaned from the literature on the consumption of gas in the gas-fired brass melting furnace and also on the losses of metal that are incurred in such furnaces. The reason for this is that the gas-fired furnace has not enjoyed such long use for this purpose as the other furnaces, and is practically a newcomer in the field. There has been comparatively little printed on the subject. Furthermore, the gas figures must be interpreted according to the thermal power of the gas employed. It also appears that most of the information available in the literature on the gas-fired furnace deals with the use of natural gas and not manufactured gas.

However, the information, scanty as it is, is valuable. In the case of the tilting furnace, fired with natural gas, having a capacity of 275 pounds, the consumption of gas was 225 cubic feet per hundredweight of metal. Then again, in the case of the open flame tilting furnace, also fired with natural gas, the gas consumption was 144 cubic feet per hundredweight of metal and the melting loss 2.7 per cent. In this case the alloy consisted of 73 per cent copper, 18 per cent zinc, 2 per cent of tin and 7 per cent of lead, with 46 per cent of new metal and no borings. Seven heats of 650 pounds each were made in ten hours.

In another type of open flame, natural gas-fired furnace the fuel consumption was from 220 to 330 cubic feet per hundredweight of metal, and in still another the gaseous consumption varied from 245 to 280 cubic feet per hundred pounds of metal. It is also stated that the consumption of natural gas for this purpose in such a furnace will vary from 186 to 230 cubic feet per hundredweight and the consumption of city gas from 278 to 416 cubic feet per hundredweight, depending, of course, on the thermal value of the gas employed.

The Correct Fuel Viewpoint

It is a fact, however, that the brass melting industry does not yet have the correct viewpoint in the choice of fuel for melting purposes. It is variously stated and generally acknowledged that gas has coal and coke beaten. Just what this means is not very clear. It ought to be evident to the brass melter that gas is the better fuel, from the purely thermal standpoint and from the advantages that it affords the user through the readiness with which the furnace, fired with it, can be controlled. It should not be compared with coal, coke and other fuels on the pure price basis. There is much more to the entire problem than the mere cost of the fuel. Of course, cost is an item and one that has, willy-nilly, to be taken into consideration. But it should not occupy the supreme position in the brass melter's mind. And when we say brass melter, we also mean all the other branches of the non-ferrous melting metal industry.

The Position of Oil Is Unstable

Thus, we must give the aforementioned statement a different interpretation than the most obvious one. Furthermore, we must also take with a grain of salt the statement often made that while gas is better than coal or coke for brass melting, oil is better than gas for this purpose. Even if it were actually true that better results can be secured with the aid of oil fuel, the user of oil should take into consideration the question of available oil supply. He should realize that the day is close at hand when the prices charged for fuel oil will advance to a considerable degree and that it may not be so wise to equip his plant with oil-burning furnaces in view of this fact. Furthermore, in using oil he must be guided by certain rules and regulations which are laid down by the fire authorities, which call for specially constructed and located storage tanks, fire prevention devices and the like. All these must be taken into consideration when computing the cost of the oil-fired furnace in comparison with the gas-fired furnace. And when all the advantages of the one fuel are compared with those of the other, and the disadvantages of both are also given due consideration, it will be found that there is an appreciable balance on the side of gas. Even though it is the more expensive fuel, it is the better to use in the long run.

Other Figures on Gas Consumption

There are still a few other figures available on the consumption of gas for brass melting. In the first place it has been found that in refining borings in a nine-ton natural gas reverberatory furnace, the loss varied from 1.4 to 2.8 per cent. This loss may be a little high, but it is due to the fact that the reverberatory furnace is used, and not to the fact the fuel is gas. As far as fuel consumption in the reverberatory is concerned, there are no available figures. Sometimes a comparison is made between the reverberatory used for brass melting and that employed in the steel industry. It has been found that in the most improved type of open hearth steel

furnace, five hundred cubic feet of natural gas (and it is assumed in all these cases that the calorific power of the gas is between 1,000 and 1,100 British thermal units per cubic ft., in this case being actually 1,045 British thermal units per cubic foot), under a pressure of eight ounces, are consumed in the melting of a ton of steel. This indicates a consumption of 250 cubic feet of gas per hundredweight of metal. It is felt that the consumption of gas in the brass melting reverberatory furnace must be much less.

One other figure may be given which is of interest. In this case a city gas having a calorific power of 650 British thermal units per cubic foot was employed in the melting of hard brass, and the consumption was 350 cubic feet of the gas per hundredweight of the metal.

The data which has been given in this article will, it is hoped, be of some value. It has been obtained from the excellent publication on brass melting issued by the Bureau of Mines. The incompleteness of the information is due to the fact that investigators do not seem to appreciate the importance of stating all the facts in making a test on a brass melting furnace. Unless these facts are clearly and accurately given, it is really impossible to tell just how efficient the apparatus or the process is.

Electric Brass

There is just one other thought that the writer would like to leave before concluding this article. It must have come to the attention of industrial gas men that the electrical industry had been somewhat successful in appending the word "electric" to certain products, such as "electric brass," "electric steel" and the like. That is, the manufacture of brass and steel and other products in which electricity is used as the fuel have become convinced that it is a good thing to advertise their product as being made with the aid of electricity, in that the use of electricity as a fuel has the effect of making the reader and the prospective user of the product believe that it is of better quality just because electricity was employed as the fuel in the manufacturing process. In other words, the manufacturers have found that it is a good thing to make capital out of the fact that they are using an expensive fuel in their manufacturing process.

It of course follows that the same condition applies to gas. Gas is a quality fuel, and its use produces quality merchandise. The manufacturer who uses gas should be encouraged to advertise the fact, and to make use of the advantages that he gains in his manufacturing process through the use of this fuel. It is evident that the gas industry, and particularly the industrial gas salesman and engineer, would be greatly benefited by such advertising. For it would tend to create the impression in the mind of the layman that anything that was made with such a high grade fuel as gas must be a high grade product. And this would be entirely true if all other necessary conditions were observed. The industrial gas men have been working to gain this end and, while the results have not been stupendous, nevertheless, a beginning has been made and future effort in the same direction should be highly successful.

Our Association and the Gas Industry*

How the American Gas Association functions to aid the gas man

H. C. Abell

Vice-President, Electric Bond & Share Co., New York City; President, American Gas Association

YOUR president has insisted that I speak to you today. It is a great pleasure to be with you and an honor to be called on to address you. I very much appreciate that honor. I asked your president what he desired me to talk about, and his answer was, of course, only one thing, "GAS." I do not believe he realized the enormity of that assignment. It would take all the time of this session to even touch on a small branch of one part of the subject. My final understanding was that my address should be somewhat on the order of a girl's dress, very much abbreviated, neither too long nor too short, but sufficient to cover all that is necessary. I will, therefore, merely touch on the association and its relation to the industry as I see it, because I believe it covers "GAS" in every branch and in all its ramifications.

An association is merely an act of associating. and to associate means to act harmoniously; jointed and connected converging, as of ideas. The accepted interpretation means a joining together of individuals, corporations, etc., all having a common inter-

*Delivered at the 1926 Annual Meeting of the Southern Gas Association.

est, pooling these interests, and working for the ultimate best development and the beneficial results to be accomplished.

The constitution and by-laws of the association cover the whole industry, the manufacturing and distributing gas companies, the apparatus and the appliance manufacturers, and all persons interested in the gas business, including students, college professors, consulting engineers, etc.

The Objects

The objects of the association, set forth in eight short sections, indicate very clearly that the work of the association to fulfill its objective is a most unselfish and constructive one, and the results to be obtained by unselfish co-operation will be of mutual benefit to the whole industry, individually and collectively, and to the people and communities served with gas.

This association was formed in 1918 and was founded on the basis of the experience obtained from all former associations up to that time. The vision and the broad perspective of its founders is being demonstrated more forcibly each year of its existence, through the influence and guidance of the officers, directors, committee members and headquarters staff since its inception and the subsequent adherence to the principle advocated.

It has been shown most conclusively that an industry can only grow as its association develops.

H. C. Abell

A Clearing House of Ideas

The association should be a clearing house of ideas and developments. The ultimate action made necessary to accomplish results must have full support and be of mutual benefit. In order to accomplish this the association must necessarily be considered the most effective means of co-operation and co-ordination of the industry as a whole.

The association cannot lead the industry in each specific subject and could not know more about each item than any one else, but by being informed of new developments and being kept in touch with the state of the art in its many particulars, it should necessarily, through this action, be of direct benefit to the whole industry.

Its activities should cover every branch of the business, from alpha to omega, technical engineering, chemical, accounting, commercial, appliances, apparatus, the development of the use of gas in every way, industrially and otherwise, public relations, etc. Each subject in all its phases, as well as management and many other problems; such as, financing, co-operation and relations with other associations, including the activities of the regulatory authorities.

The Advisory Council

This immense work is undertaken through the advice and suggestions of the Advisory Council, which consists of leaders in the industry, who meet at prearranged periods in order to discuss the various pertinent problems and to formulate plans for the prosecution, development and solution of the subjects under discussion, and by the assistance of the directors, officers, headquarters staff, the sections and their committees, the many sub-committees and special committees.

Each section's and each committee's membership consists of specialists who are leaders in their particular line of endeavor. There are over five hundred active workers assisted by many hundreds of others. When this mutual co-operation is considered with each member diligently working for only one unselfish purpose it should be apparent and perfectly obvious to any one the result which can be accomplished by such an organization, properly co-ordinated and backed up by the industry.

Skepticism in the Past

Occasionally, in the past, some gas company executive would ask the question, "What can the association do for me that I cannot do for myself?" And sometimes he might answer, "I cannot see that the association is of any benefit to me." I never hear that statement any more. The broad-gauged, far-sighted executive and operator, and that applies to the smallest company as well as to the largest, must constantly question himself concerning his ability and the ability of his own immediate organization to solve and answer correctly the many prob-

lems which are presented. Unquestionably, he will at once say, "I must consult Mr. Executive of such a company, because he has just been through that very problem."

When he knows about the association, he will say, "Why not consult the vehicle of the pooling and collecting of information of all developments and thereby obtain the knowledge from the whole industry of any specific information and its proper use. When he further considers and knows that this applies to every branch of the business and also the the every conceivable problem that may arise, he will immediately say, "The association can be of benefit to me and likewise I can be of benefit to the industry in the whole country, because what affects me will affect some one else, not only a neighbor but a gas company far removed geographically." On a further study of the entire gas subject he will probably find that he has many problems himself which will require the best of assistance for their solution. He may have a problem of gas manufacture, which the whole country has today. He unquestionably will immediately pool his interest with the industry and assist to attempt to make any and all problems more easy of solution. He may have one of utilization of gas and he will find that the industry, through the association, is well on its way with that problem, and he will soon know whether the appliance can be obtained to solve the specific requirement. He will also be informed if his own house is in order, if he is supplying a fairly uniform specific gravity of gas, adequate and commercially correct pressures and many other matters which in the past he has only given a passing thought, but which are now developing to be real problems. He should be the first to discover any comparative deficiency in service. He can then arrange to remedy the same with the least expense and embarrassment to his company and without the order of a regulatory body. He will also be informed how far the regulatory authorities can go, because the industry has already solved the problem for the present, through its co-operation, and development work with federal, state and municipal bodies.

Briefly, considering the above relation of the association to the industry, which could be elaborated on in much detail, would take not only the time of this session, but the time of your whole convention and still leave much unsaid, I cannot see how either a broad-minded, magnanimous gas executive or a selfish, self-centered, egotistical individual, who may be operating a gas utility, can afford not to support the industry in every possible way. I believe the best results can be accomplished through a pooling of all and every interest in the industry and a united development. The vehicle for that pooling is the National and International Association, named the American Gas Association.

Need of Uninterrupted Perserverant Effort

I wish to bring to your attention another suggestion, that is this—to accomplish any results will require work and in many instances that work must be uninterrupted and must have constant application in order to concentrate properly on the problem. The work of the many and various committees is most excellent, but the committee members are company employes and of course cannot work uninterruptedly on any problem undertaken. To accomplish the result sought it may be necessary to augment the special activity of the committee by the help of an expert, under pay of the association, who can give his undivided time to develop the problem, with assistance given by the company employes, to a point of most benefit to the industry. This program takes money. Therefore, when you feel like criticising the association for a lack of solution or knowledge of some special problem, first go into the matter carefully and see what its solution would mean to your interests and by comparison endeavor to ascertain what value in dollars to you the association might be or be made to be. Consider almost any problem, whether it be engineering, commercial, industrial, regulatory, public policy or otherwise, I believe if you will give the industry credit for what they have already done, you will consider your contribution to the association in dues, special assestments or whatever way paid the best investment your company has ever made, and if you further consider the many present pertinent problems, some of which are being undertaken now and many more not touched, you will, I think, wonder why you have not thought of this in the past.

Conclusion

In conclusion, I humbly ask you to think of just a very few of your many problems to be solved and some of your accomplishments, then consider the gas association as a medium by which you can be assisted and a means through which you can assist. I believe it is the desire of almost every one to be a vital part in the industry in which they are interested; first, for their own good, and second, for the good of others. This can only be done by becoming an active participant in the affairs of the business. I think that in the gas industry this can best be accomplished through the American Gas Association. With a knowledge of the results accomplished by such an association, I am confident the stockholders, the directors and the officers would be glad to share a part of their net divisible income, to be used by the association to still further advance the industry and make it more useful to humanity; further when it becomes known that any dues and appropriations used in such development work are considered a part of the operating expense and will not affect the net divisible earnings except to increase them and at the same time decrease the price of gas to the public and increase its usefulness, they will not only desire to help, but will wish to lead.

Industrial Displays in Gas Windows

How the Pacific Coast G. & E. Co. cooperates with its customers

William H. Matlack

GAS men, who are truly interested in getting the idea that gas is the ideal fuel for any industrial uses before prospective customers, will no doubt be very much interested in the promotional work being done by the Pacific Gas and Electric Company in San Francisco under the direction of Henry Bostwick, Division Manager and Frank Talcott, Division Sales Manager for that company. First, let me say for the benefit of those who are not aware of the fact that this company does not sell appliances but, to quote Mr. Talcott, "they naturally are interested in the sale of both or either of their commodities to all its consumers—and to cooperate to the fullest extent with the appliance dealers and in assisting them, not only in sales of appliances, but in selling to the general public, by men especially trained in the work, the idea of the universal use of gas.

Displaying Merchandise

"The manner of introducing merchandise to the general public is an all important one. Our first idea originated through problems confronting the merchant in displaying his goods during the day. As everyone knows, one evil that affects the proper display of merchandise in windows in daylight is the reflections.

Featuring Use of Gas in Textile Industry

"To overcome this the company spared no expense to install in its windows a super-lighting installation that not only overcame considerable of the daylight reflections, but also offered great possibilities in the art and use of color lighting.

"Knowing that the merchant is worried about daylight reflection, many having installed concave windows, which add considerable expense to his installation as well as cut down available space for display of merchandise, we invited various industries, using our commodities, to display their merchandise in our window for a period of two weeks each, thus co-operating with them to the point of showing their merchandise to the public under proper illuminating effects and also selling them the idea of daylight lighting to overcome reflection.

Color Schemes Are Valuable

"The windows were so equipped that during the day sufficient candle power could be developed to offset the reflections in the glass, etc., and color lighting was used to extenuate and bring out a color romance in the merchandise."

Color screens may be used very effectively to bring out the beauty of gas range, water heater and space heater windows, their setting and backgrounds. This subject has been treated upon in the American Gas Journal, in this department, several times.

"It is a recognized fact that merchants pay large sums of money for square foot frontage on principal streets. The high cost is due to the great traffic on these streets, which affords them a chance to display their goods daily before thousands.

"It is also recognized that only during the day are the majority of these establishments open for business and this is the time to attract people to the point of purchasing.

The Value of a Window Display

"Two things determine the value of a window display—first, the number of people it stops, and second, the daily receipts from sales of the merchandise displayed. The P. G. & E. building is not located in the congested shopping district, but a check made on a Saturday afternoon, when people were hurrying home from work showed that in one half-hour's time 129 people paused, out of which 77 read all signs and thoroughly inspected the merchandise on display in our window and a certain number of them entered the building inquiring as to the purchase price.

"At night the color lighting drew people from the corner, one-half block distance; they walked past a number of windows without pausing to view displays. These displays even caused automobile travel to swing at the corner, a number of the cars stopping.

"Up to this point this has been largely 'a lighting' story; however, attention is called to the manner in which we tie-in and help to sell the gas idea.

Tieing-in at the Sale

"One of these windows was devoted entirely to consumers who utilize our gas for industrial purposes. In every instance we had a certain gas message we wished to get over and it was arranged so as to fit in with the particular industry's work and

display. For example, in the exhibit of Ganter and Mattern Company, manufacturers of knit goods, please note the following wording:

"'The yarn before knitted must be conditioned by equalizing the moisture content. A uniform temperature must be maintained during all climatic conditions for which purpose gas is used as a dependable fuel.'

Gas in Coffee Roasting—A Window Display Subject

"We also carried an attractive card of our own, explaining the reason for display of merchandise."

A Coffee Display

The second window contained a very striking display of Hills Brothers Coffee, a well and favorably known brand on "the coast." Of course, it is GAS roasted coffee, for how else could it every employ such slogans as, "No other beverage has won so many friends" or "No finer coffee ever passed your lips."

This is commendable work and if some more of the gas companies will get behind such a movement it will be but a very short time until we will be able to list another thousand uses for gas. Both ideas, that of proper window lighting and displays of customers' products, are well worth study, and the time and expense of installation.

DOUBLE INVESTMENT

Life insurance companies of the United States have doubled the funds invested by them in public utility companies in the last three years, in which time the total has increased from $261,000,000 to 568,000,000, according to Robert W. Huntington, president of the Connecticut General Life Insurance Company. These figures are taken from the records of fifty-two life insurance companies holding 93 per cent. of the assets of all United States companies.

"The increasing popularity of these investments seems to me to be due partly to the laws of various states appointing public utility commissions which guard the companies against cut-throat competition and at the same time insist upon a high quality of performance," he said.

Aiding the Small Gas Man*

Southern Gas Association features special program for small gas properties

S. E. Linton

Vice-President and General Manager Nashville Gas and Heating Co., Nashville, Tenn.; President Southern Gas Association

SOON after the election of your present officers, several of us met and discussed the important subject of drafting a program for this meeting, it being the desire of your officers that the papers and addresses, which we hoped to have, would be of such a type and character as to give the greatest amount of enlightening information, help and assistance possible to the greatest number of our members, and be inspirational to all in attendance.

In our endeavor to work out such a well-balanced and helpful program, it was deemed necessary to make a careful and detailed survey of all the gas companies in the Southern states, and gather such data and information as would help us to formulate such a timely program. This survey developed much interesting data, showing separately and by states, the combination gas plants, straight coal gas plants, water gas and by-product plants, and also plants municipally owned and operated, grouped by states, and listed individually, according to the number of meters in service, miles of main, gas sales, population supplied, sales per meter per year, and yearly sales per miles of main, inhabitants per meter and sales per inhabitant. Much additional interesting data was compiled, which lack of time prevents noting, but the most important revelation was that

*Delivered at the 1926 Annual Meeting of the Southern Gas Association.

over half of the gas companies in the South have less than 2,000 meters in use, and that 85 per cent of them have, each, less than 4,000 meters in service. This survey, made by Vice-President Brown, showed further that among the Southern plants there was one meter in use for each 8.77 inhabitants supplied, the annual sales per meter being 36,026 cubic feet; that 4,177 cubic feet of gas were sold, per capita supplied, and 2,754,000 cubic feet sold per mile of main in use. A further analysis of this data showed us that the cities or towns with 4,000 or less meters in use did not show up, proportionately, as well as the survey would indicate, and that the large volume of sales in our larger cities helped materially to bring up the average of the small plants.

A Program For the Small Gas Plant

This survey showed clearly that none of us were selling gas per meter, or per mile of main, that should be sold, and it was felt that if we could get over to these small operators, a program of papers and addresses by men in our industry—men of faith, courage and vision, who have made unusual successes in special lines of merchandising, operating, new business development, etc., we would be able to give to our membership a worth-while and helpful program. Therefore, the Committee decided that our program should be developed, primarily, to render all possible help and assistance to these small properties, many of the managers or representatives of which are not privileged to attend the meetings of the American Gas Association—our parent Association—which holds general and sectional meetings, discussing at length and in detail timely subjects covering every phase of our industry, as pertain to modern practices and business development. Also, many of our members are not connected with holding companies, through which channels they may, or should, receive such helpful, timely and needed information and assistance as would enable them to make better showings with their properties, by enabling them to decrease operating expenses, increase gas sales and increase their earnings.

A Practically Helpful Program

We have attempted to plan and draft a program which would cover pertinent and timely subjects of paramount interest and importance to the operators of small properties, which, at the same time, would be equally helpful and inspiring to the operators of larger properties. Our purpose and hope are that these papers and addresses will be the means of assisting us in increasing our volume of sales along our present mains, without materially increasing such investments, as the primary object of the gas business is to earn a fair rate of return on the present investment. Our earnings would then show a much larger proportional increase than they would from sales from new extensions. Therefore, the one thought that has dominated your officers in the preparation of this program is the desire to show not only how small economies can be effected in improving and reducing operating expenses at the plant, but, primarily, how potential business can be developed along the lines of our present mains and services, as it is principally from such possible and undeveloped new business sources that we may expect to receive our increased earnings.

The Cost of the New Customer

Quite often, the management of properties, in their eagerness to show continued yearly increase in gas sales, seem prone to extend new mains into outlying and, often, sparsely settled districts where, in many instances, the net return will not more than pay the interest on the investment. It, therefore, must be remembered that when you secure a new domestic consumer from such a new main extension, you have applicable to that consumer's cost account the interest on the main, service and meter, plus the proportional overhead, taxes, and other fixed charges. Thus, when the total costs are enumerated, and the actual net profit figured on the gas sold, it will be readily seen that a large per cent of the new business extensions are unprofitable for the first year or more, unless such extenssions are made into well built-up

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Push Back That Smoke Screen
and add five years to your life
"FIVE years would be added to the average length of life if smoke and filth were out of the air we breathe. Our appalling and increasing pneumonia death rate in our American cities is due to this smoke in the air"—a famous public health expert recently stated.
A human adult inhales roughly 30 pounds of air per day—four times his intake of food and water combined. Clean air is as imperative as pure food and water.
"If it's done with Heat—you can do it Better with GAS"
Gas used for all heat purposes in every factory, public building and home would stop the smoke nuisance forever. Everywhere use gas, the economical, efficient heat, to end filth, dirt, ashes, pneumonia, and wasteful coal burning methods.
(Your Name and Address Here)
A.G.A. 542

"Gas Versus Smoke" a Pertinent Ad

sections of the city, and considerable new business secured the first year. Now, consider and figure how much greater the net profit will be to your company by developing a consumer from a house already serviced, as the investment on the main and service, and taxes on them, are already taken care of. The profits which would come to your company from gas sold to such a consumer would be very much greater proportionately, as you would have only a slight portion of office expense, interest on meter investment and burner cost of your gas, to be deducted from the actual receipts from this consumer. Thus you will see how very profitable business is that can be developed from idle services.

Then again, consider how much greater still will be the net profit that will accrue to your company by securing additional business from your present consumers. As an example, assume that your average domestic consumer is now burning 3,000 feet of gas per month. The receipts from the sale of this gas not only pay all of the carrying charges applicable to this consumer, such as interest on the main, service and meter, depreciation, and the consumer's proportionate overhead expense, but, when all charges are listed and set up against the actual gross receipts from the average consumer, it will be found there is a good profit to the company from the gas sold him. Now, suppose he is induced to purchase a water heater or other appliances, which will consume 2,000 feet per month, at $1.50 per M, which equals $3.00 gross increase from this consumer. All of the expense of every character that would be chargeable against this consumer is already being met through his present average monthly consumption. Therefore, the only charge applicable against this increased consumption will be the actual burner cost of gas, which, if assumed is as high as 75 cents per M, would leave you an actual increased net profit of $1.50 per month from the additional gas sold to this consumer. I want again to emphasize that we must be very diligent to build up, as far as possible, our gas sales with our present consumers, as it is from such sources that the greater part of our increased earnings will accrue. A careful survey of the great amount of undeveloped business only waiting intelligent solicitation will startle anyone who will make a careful, intelligent and detailed survey, similar to the one I will briefly describe.

A Gas Company Makes a Survey

The gas company in a certain southern city of fair size, and close to many coal mines, determined more than a year ago to make a house to house domestic survey. Every house within the city, along the lines of the gas mains, was visited, and a thoroughly accurate record obtained of the size of the service in the house, detailed type and kind of cooking stove, or stoves, in use, style and type or methods of house-heating and of auxiliary heating, type of furnace, where there was one, laundry equipment, if any, method of heating water, and type of appliance used. Then, on this survey card was listed the prospective business.

This survey was made between December 1st and April 1st, last year. The city was divided into sections, and each section was surveyed by the salesman having entire charge of the appliance sales in that particular section. While making this survey, he studied the possibilities for additionaal appliances and gas sales in each house and, wherever possible, obtained information and dates for prospective sales. As the survey progressed, the sales manager began tabulating these cards and making up additional records, which showed, in detail, appliances in use, and prospects for each house where gas was at present being supplied. Also, prospect cards were made for houses which were serviced, but where gas was not being used, and cards for every house along the lines of mains, which were not serviced, there being many houses found without service in them.

Results of the Survey Surprising

When this survey was finally completed, the analysis was most amazing, and showed clearly that not 50 per cent of the potential business had been obtained, that might have been secured on the present mains and services. This lack of business, however, was probably largely due to the very low selling price of coal and the high price of gas, and the wasteful negro cooks. It is needless to say that the officers of the company referred to are now aware of the great amount of undeveloped business and have been stimulating a most energetic campaign to increase the consumption from their present consumers by selling them some of the appliances the survey showed they should be using. The efforts of the sales department are also being energetically directed towards securing new business from the non-users of serviced houses, and from houses not serviced, by selling them services and necessary appliances. An effective method is now in use which has resulted in securing many new consumers. Cards are slipped under the front and rear doors of each vacant serviced house, stating that gas is in the house, and it is only necessary to telephone the gas company for immediate service, which will be supplied without deposit (pending credit approval) or red tape, and that appliances are sold by the gas company on an 18 months' payment basis. These cards are carried by meter readers, collectors, salesmen, fitters and order men, and deposited in every vacant house noted.

An Industrial Survey

A separate industrial survey was made by the industrial engineer and sales manager, listing practically every industry in and near the city where heat is now being used, or could be used. In addition, all hotels, restaurants, cafes, schools, colleges, hospitals and institutions were listed, with the prospective business noted. A favorable industrial gas rate having previously been granted, many of these industrial consumers were using gas in various ways, but the survey revealed possible additional business only awaiting an intelligent salesman. As a result of this campaign, many of these latent prospects are now profitable consumers.

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Gas Instruction at Johns Hopkins

Activities and progress of work sponsored by Southern Gas Association

Edward L. Rieha

Chairman Committee on Gas Engineering Chair at Johns Hopkins University

THIS report is to cover in general outline the activities and progress which have taken place since the organization of the Department of Gas Engineering at Johns Hopkins University and especially the developments that have occurred since the last Annual Convention.

Scholarships

Foremost in the advancement of this undertaking has been the founding of a number of Scholarships each for the full term of four years. Before the Wilmington Convention, last year, there was an announcement made of two Scholarships given by the Consolidated Gas, Electric Light & Power Co. of Baltimore, Mr. Charles M. Cohn, vice-president. Whilst in session, the Convention was notified by telegram that another Scholarship had been given by the Washington Gas Light Co., Mr. Ord Preston, president. Since that time the following additional Scholarships have been donated: Two by the C. H. Geist Co., Philadelphia, Pa., Mr. H. S. Schutt, vice-president. One by the Tampa Gas Co., Tampa, Fla., Mr. John Gribbel, president. One by the Mobile Gas Co., Mr. Rufus C. Dawes, president, Chicago, Ill., and one by the Southern Gas & Power Corp., Philadelphia, Mr. Walter Whetstone, president.

Eight Scholarships

This makes a total of eight full four year term Scholarships to which is further to be added the two new ones given by the Consolidated Gas, Electric Light & Power Co. of Baltimore, which however, are effective only during the scholastic year 1925-1926.

These Scholarships, worth about $350 a year to each of the recipients, are serving a number of very valuable ends among which may be mentioned (1) as a recruting agency to bring into the service of the gas industry a certain number of promising young men, (2) as an aid to a number of worthy students who might otherwise find it difficult if not impossible to secure a technical education, (3) as a manifestation to the respective communities that the gas industry is on the alert to its opportunities and that it is in the hands of capable men of vision and (4) as an evidence to the entire gas fraternity and the educational world that the Southern Gas Association has launched an important movement which can be expected to grow and be of vast benefit not only to its supporters but to the entire industry in the United States.

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*Presented at the 1926 Annual Meeting of the Southern Gas Association.

Enrollment

At the beginning of the first semester of 1925-1926, fifteen men enrolled in the Gas Engineering Department as full time students. Twenty-six others were entered for the evening extension course, which meets two hours a week, and is engaged in the study of the utilization of fuels, particularly gas.

This enrollment in the second year of the department's work was larger than expected. As the University year advances some losses in enrollment may occur due to illness, financial difficulties, failures or other causes especially during the first and second year. Some decrease must therefore be expected as the year progresses. It is believed, however, that this decrease will compare favorably with that in other departments.

On the distribution of Scholarships and the men who have been accredited with the proper standing and were selected on a competitive basis, the following should be noted, that the four Scholarships donated by the Consolidated Gas, Electric Light & Power Co. were won by four students from Baltimore, the two from the C. H. Geist Co. are being held, one by a young man of Atlantic City, N. J., and the other from Pitman, N. J. The Scholarship of the Washington Gas Light Co. was won by a party from Washington, D. C.

Details of Scholarships

Mr. Leonard A. Covell of Baltimore, Md., won the Scholarship given by the Tampa Gas Co., Tampa, Fla. Mr. Stephen G. Moran of Gadsden, Ala., merited the Scholarship given by the Southern Gas & Power Corp. of Philadelphia.

The Scholarship given by Mr. Rufus C. Dawes, president of the Mobile Gas Company, was not filled for the current year. The funds were designated as a special contribution for the aid of fundamental research in gas engineering at Johns Hopkins, and will be applied to work carried on by advanced students who may be candidates for the Master's or Doctor's degree. The results of such research will be published for the benefit of the entire industry. It is hoped that Mobile will furnish a candidate for this Scholarship next year.

The Sprague Meter Co., Mr. W. P. Hutchinson, vice-president, has given the university a sectioned gas meter and regulator illustrating the methods of construction.

The committee desires to urge upon the Association the necessity of interesting students from our territory to enter upon these competitive tests and if possible thereby to augment the number of men attending this course.

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As The Journal Views It

GAS IN INDUSTRIAL ADVERTISEMENTS

A very interesting advertisement appeared recently in the Saturday Evening Post, calling attention to the fact that certain parts of the telephone receiver, as made by the Western Electric Co., are manufactured with the aid of gas. The advertisement read somewhat in the fashion of the familiar nursery rhyme of the House that Jack Built, and started by stating that "This is the Holder that Holds the Gas that Heated the Fire that Melted the Metal," etc.

To the casual observer, perhaps, this advertisement meant nothing more than a rather attractive sort of publicity for gaseous fuel. But to the industrial man, who has had to listen to manufacturers talk about electric steel and electric brass, it means much more. For a long time efforts have been made to get manufacturers, who advertise nationally, and who use gas in the manufacture of their products, to state in their advertisements that gas was the fuel used in their plants. Of course this would not be done by these manufacturers just because the gas industry requested it. There must be something in it for them; that is, they must be able to derive some advantage from such publicity.

And they can well derive such benefit, because there are certain advantages that are gained from gaseous fuel that are directly translated into quality of product, and that distinguish their products from others of similar character, not made with the aid of gas. Such advertising would certainly be of value to the gas industry, and the fact that the Western Electric Co. has seen fit to mention gas as the fuel that was used in making parts of the telephone is a very good indication of the importance that this progressive enterprise attaches to gaseous fuel.

It would be well for industrial men and for the gas company to continue to exert strong effort to secure such recognition of gas in national advertising. It would go very far in helping the cause of the industrial gas man. It would certainly serve to imbue in the minds of the people at large the fact that gas is an important industrial fuel and that when it is used in the manufacture of certain products, the quality is assured.

In closing, it should be mentioned that the industrial gas man and the gas company must not expect the manufacturer to accede to their request and to use gas in their advertising copy, without it being brought conclusively to their attention that there are decided advantages to be gained from such practice. You cannot expect that the manufacturer out of clear goodness of heart will further the cause of gas, unless he has some special interest in doing so. And the strong point in the case is that he does have such an interest, and he can be made to see it, if the matter is properly presented to him.

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WE ARE DIFFERENT

It has often been said that public utilities differ from other business. We have characterized ourselves as being differently constituted, as possessing different problems, as being affected by different factors and in different ways than are all other types of human enterprise. This is no doubt true, however we may feel about it.

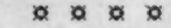
The following statement, which seeks to define this differentiation, is therefore of considerable interest.

"Public utilities differ in many important respects from the mercantile or manufacturing organization. They exist to serve all comers—not a select few; and this has been true of them from the time of the communal well and its successor, the town pump, probably the first public utility. This principle is embodied in early laws and court decisions concerning ferries, wharves, pack-trains and similar beginnings of public service enterprises. Furnishing their service involves a permanent investment in land, buildings, machinery and apparatus, and distribution systems. Gas and electricity are made and delivered to the point of use, and must be ready for use in any quantity at any time desired. The physical and human elements which produce and maintain the service, therefore, must be kept, not abreast, but always a little ahead of the greatest possible demand. The investment in physical properties, consequently, never lessens; it always increases.

"The public utilities' business is one of public service which they cannot forget if they would, and there is no disposition on their part to forget it. With their franchises, the public has committed them to

a job on which depends the material and social welfare of a very big majority of the people. The men and women who make up the organizations of the public utilities—executives, employees and owners—are deeply impressed with the necessity of doing that job right and of fulfilling this trust to the best of their ability, not once in a while, but all the time. That is the spirit in which they go about their work; that is the attitude of every intelligently managed utility, and there are few who do not have just such an attitude.

"But to do their job in the best manner, the utilities require, as well as desire, understanding and co-operation on the part of the public, friendly interest in what they undertake, sympathetic comprehension of what they are up against, and a belief on the part of the public that the utilities are endeavoring to meet all problems squarely and honestly and not narrowly and selfishly."



GAS INSTRUCTION AT JOHNS HOPKINS

(Continued from page 270)

Within a short time, preparatory school students throughout the country will be planning to enter colleges and universities for the year 1926-1927. If the donors of Scholarships, which may be available, are to secure for the gas industry the highest type of young men, efforts should be made to bring these Scholarships to the attention of prospective students especially such as may be located in our own territory.

Research Work and Related Activities

Special research was conducted under the auspices of Dr. Wilbert J. Huff, Professor of the Department of Gas Engineering, and the reports thereof entitled, "On the Origin of Carbon Disulfide in the Carbonization of Coal" and "The Detection and Estimation of Traces of Carbon Disulfide in Small Gas Volumes," have been completed by him. The first report is now in press for the Journal of Industrial and Engineering Chemistry, and the second one appears in the January, 1926, number of the Journal of the American Chemical Society, pages 81-87, Volume 48.

Dr. Huff served as the Chairman of the Sub-committee on the "Theory of Heat Transfer in Tubular Condensers" for the Committee on Condensing and Scrubbing, for the American Gas Association. A report was submitted to the Convention of this Association in October, 1925, summarizing important phases of the present known theory and the need for further information on the design of condensers and scrubbers.

Special Fund For Research Work

One of the most significant developments during the past year has been the gift of a special fund for Gas Research Work and which was given by the following companies: The Consolidated Gas, Electric Light & Power Co. of Baltimore, the Consolidated Gas Co. of New York City, the Rochester Gas & Electric Co. of Rochester, New York, and the Mars Co. of Oil City, Pa., a subsidiary of the Iroquois Gas Corp. of Buffalo, N. Y. The fund provides for the salaries and equipment for three full time research workers who under the direction of the Professor in Gas Engineering, will investigate in the school laboratories at Johns Hopkins various processes of gas manufacture, utilization of plant facilities and the production of by-products.

This special gift covers specifically work for a period which expires in December, 1926, but it is hoped that the results obtained will warrant its continuance.

To carry on the work just mentioned, Johns Hopkins University announces the appointment of Mr. Lloyd Logan to be a Research Associate in Gas Engineering and Dr. Oscar W. Lusby to be Research Assistant in Gas Engineering. Mr. Logan has been connected with the Research Division of the Koppers Co. Laboratories and has done work at the University of Pittsburgh, Columbia University, Massachusetts Institute of Technology and the Royal Technical College, Glasgow, Scotland. He also had extensive and varied industrial experience before joining the Koppers organization. Dr. Lusby has just completed his graduate work at Johns Hopkins and has received his Ph.D. degree from that university. He is a graduate of Randolph Macon College, Ashland, Va., from which institution he received an A.B. degree in 1922. A third research worker will probably be appointed as the work develops.

Recommendations

The foregoing resumé of the results achieved so far has sufficiently proven the need for the work which is being carried out at Johns Hopkins and that a widespread interest has already been awakened within the industry. While the assistance from so many quarters has been most gratifying and has lent so much to the present success, it would be a mistaken idea to think that the subject does not require more adequate and continued support.

The insurance of the permanency and growth of this undertaking is something that will soon have to be given particular study and planning on the part of the promoters. To consolidate the work already done by the Southern Gas Association and the university, and to permit the formulation of educational and professional policies of the highest standard, a permanent income is necessary.

The appropriations allotted Johns Hopkins by the Legislature of the State of Maryland, besides the

(Continued on page 274)

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 113

Combustion

Action of Chemicals

As explained in a former lesson, one of the four main methods that are used for determining the manner in which various substances are combined and contained in coal is to subject the coal to the action of chemicals. These chemicals attack the coal and convert it into other forms which are called degradation products, meaning that these substances are less complex in character than those that are originally contained in the coal itself.

Thus, various oxidizing agents such as sulphuric acid, nitric acid, chromic acid and the like, are used for this purpose. This treatment generally dissolves portions of the coal, as for example, when it is applied to peat, brown coal or lignite. The substance, that is obtained, is known as humic acid, which is a material that separates out after the liquor has been acidified. The amount of this material, that is obtained in this manner, is a rough indication of the geological age of the coal. Thus, for example, peats will yield 50% or more of humic acid, while the soft and hard coals are practically unaffected by the treatment.

In passing, it might be mentioned that the action of chemicals on coal has been taken advantage of in the development of a technical process which promises to be of considerable commercial significance. What is referred to is the Bergius process for the conversion of coal into oil.

Selective Solution

The second method for carrying out a rational analysis of coal is to use a number of solvents to dissolve out different portions of the coal substance, while effecting a minimum of chemical change in the same. Such solvents are employed as benzene, chloroform, petroleum, ether, pyridene, aniline and the like. The difficulty, that is attached to this method, lies in the fact that the coal substance is but very slightly soluble in these solvents.

However, it has been found possible to distinguish between a series of substances known as the alpha, beta, and gamma compounds. Thus, for example, the alpha compounds are insoluble in pyridene and yield gas on destructive distillation. The beta compounds are soluble in pyridene, while the gamma compounds are also soluble in cholorform. On distillation, the gamma compounds yield gas and tars, while the residue is well fused and coked.

ANALYSIS OF COAL
Action of Chemicals on Coal
SULPHURIC ACID
NITRIC ACID
Acids convert Coal substances into Liquid form. Proportion of dissolved substances obtained, a measure of geological age of Coal.
Powdered Coal and Nitric-Acid
Coal plus liquifying agent equals derived oil (used in place of petroleum products)
BERGIUS PROCESS
Selective solution:-Solvent used to dissolve out parts of coal-substance.
Powdered Coal with Solvent
BENZINE
CHLOROFORM
PYRIDINE
Alpha-Beta-Gamma Compounds thus obtained serve to distinguish Coal.

(Continued from page 272)

university's general fund supplemented by student fees, do not cover the present day needs of the School of Engineering. In view of these facts, the Department of Gas Engineering will have to turn to the gas industry for that support which is so vital to its future existence.

National Publicity Plan

Your Committee has already given this phase of the situation some consideration and at a recent meeting in Baltimore has deemed it advisable to select and appoint a special Ways and Means Committee that is to compile and organize an effective mode of national publicity and a selling campaign of the subject to the entire industry throughout the country and in that way gain an increased and permanent support for the Gas Engineering Chair.

Education in the colleges and universities of America has been dependent in a large measure upon gifts and bequests from men of means and vision who have found such gifts to special fields of education a manner of service which has afforded the giver much gratification. The committee hopes that when its campaign is launched for permanent funds, there will be a ready response from all those that are interested and especially such concerns and individuals as may wish to inscribe their names on the roll of honor in perpetuity and thus erect in this educational endeavor, a lasting foundation dedicated to the betterment of service to all mankind.

The needs of additional scholarships should also be stressed with emphasis at this time, inasmuch as many students that wish to enroll are not possessed of the necessary means to attend the Gas Engineering course. Some of the larger gas companies in our territory have not as yet been heard of and it is to be hoped that before the close of this Convention several additional Scholarships will be secured. We desire to mention this particularly for the benefit of such men as may wish to enter the school and whose homes are in the South.

Concluding Remarks

In conclusion, we desire to offer our sincere thanks and appreciation to the many friends who, through their co-operation have made any progress indicated possible, and to whom credit should be given for the success which has been attained. Foremost among the co-laborers in this undertaking have been Dr. Wilbert J. Huff and Dean J. B. Whitehead of the University.

Acknowledgments

It is, of course, impossible to adequately express the deep acknowledgment that our committee owes to the various parties that have become interested. All of the members of the committee in Baltimore have been diligent and energetic in pushing this matter to the forefront so that a wider circle of supporters may be gained. Mention should be made of the aid given by Mr. W. R. Addicks, vice-president of the Consolidated Gas Co. of New York City; Mr. H. C. Palmer, vice-president of the Iroquois Gas Corp., and Mr. J. P. Haftenkamp, general superintendent of the Rochester Gas & Electric Corp. who represented their respective companies in the negotiations which led to the special gas research fund now available.

In closing these remarks of acknowledgment, I wish to include appreciation of the assistance given by our secretary, Mr. J. P. Connolly, through the Publication of the S. G. A. bulletin and also the Gas Journals that have from time to time given the subject publicity during the past year.

In closing your Chairman desires to add the following statement in special acknowledgment of important aid:

Mr. Charles M. Cohn, vice-president of the Consolidated Gas, Electric Light & Power Co., Baltimore, has given his undivided support since the inception of this project and has contributed freely of his time and money to promote the development of the work. Mr. E. B. Luce of the Baltimore company, has through his offices given great assistance in this matter and has been responsible to a large degree for some of the Scholarships secured. Likewise it must be said that Mr. H. R. Cook, Jr., general superintendent of the gas division in Baltimore, afforded the new department every opportunity for the inspection and investigation of the plants in Baltimore.

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GAS HEAT WIDELY USED IN MAKING RADIO SETS

The radio set of today, intricate, efficient and handsome, is the result of mass production and scientific heat application. From the polished cabinet and panel to the delicate tubes and condensers, accurately regulated heat plays an important part, and manufactured gas has come to be the chief fuel in many processes.

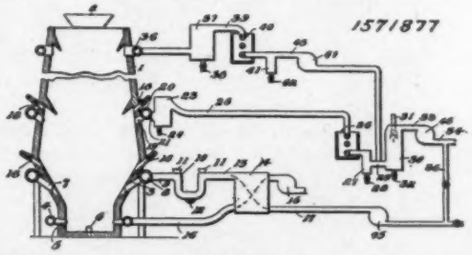
The cabinet is made of wood which has been dried in a gas-heated kiln, and the pieces are held together by glue from a gas-fired pot, while the front panel is made of molded bakelite, fused into its mold by gas-heated plates automatically held at an exact temperature.

The tubes, the most delicate part of the apparatus, are made by a process similar to that used in manufacture of ordinary electric bulbs, in which gas heat is used both for heating and annealing. Gas and glass have been closely linked ever since the development of mass production of glass specialties, and the making of radio tubes is one of the most successful applications of heat held within narrow variations of temperature.

PROGRESS IN GAS TECHNOLOGY
Domestic and Foreign

GASIFICATION OF COAL

IN the gasification of coal, the process which comprises establishing and maintaining a vertical column of distilling bituminous fuel with a carbonized base, blasting said base with hot air at a temperature at least sufficient to fuse and run ash



components as slag, withdrawing a regulated portion of the hot gases from said base, filtering the withdrawn hot gases through carbon, and transferring the heat of the filtered gases to air in furnishing said hot air.—U. S. Patent No. 1,571,877.

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CARBONIZING APPARATUS

THIS apparatus is particularly for the manufacture of shaped fuel by the carbonization of coal. The retorts are composed of a nest of cast iron tubes which are formed in one piece, or in two pieces bolted together, or of plates of H section. The breadth of the tubes is 2—7 in. with a taper of not less than 1/10 of an inch per foot. The metal retorts are enclosed by horizontal fireclay tubes one above the other, there being one set of tubes on the outside and two sets between the nests of retorts. The retort tubes and the refractory tubes are separate units which can be replaced when required. A cooling chamber is arranged below the retorts and the apparatus may be combined with a producer to supply the heating gas and with a regenerator to heat the air supply.—British Patent No. 245,190.

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COKING PROPERTIES OF COAL

ACCORDING to the Chemical Trade Journal and Chemical Engineer, 1926, page 65, a paper read at a meeting of the Society of Chemical Industry in England discussed a proposed standard method for the determination of the agglutinating value of coal.

Particular reference is made to the effect of inert matter. It was said that the phenomena associated with the coalescing of coal during carbonization were the fundamental properties to be studied in the industrial utilization of coal, particularly in gas works and coke oven practice. A coal which contained the highest proportion of agglutinant, that was of beta and gamma compounds (to which the coking of coal was now fairly definitely attributed) did not necessarily form the best coke under the ordinary conditions of carbonization. Any coal might be taken to be composed of two portions; the smaller portion being fusible and giving a cellular more or less vitreous mass on destructive distillation and the larger portion being infusible, and, in this connection, often termed "inert matter." These two fractions did not necessarily form a perfectly homogeneous mixture in the coal mass. The so-called "inert matter" exerted a remarkable, and hitherto unsuspected, influence on the manifestation of agglutinating properties by the cementing material of the coal.

During carbonization the molten cementing material was more or less rapidly absorbed or drawn by capillarity into the pores of the infusible material. It was mainly the relative porosity or absorptive capacity of this latter material which governed the amount of cementing material which would be left available for binding together the coke mass.

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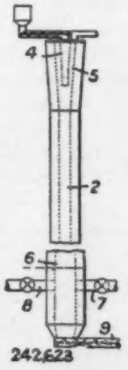
POWDERED FUEL GAS GENERATOR



POWDERED fuel is fed through a preheater 4 surrounded by a gas collecting space 5, to the central cylindrical part 2 of the retort. A limited supply of air is introduced through pipes 7, 8 and passes upwards through the reaction zone 6 in counter current to the descending fuel.—British Patent 242,623.

ILLUMINATING GAS FROM STEAM, OIL AND COKE

AN intimate mixture of oil vapor and steam, before being introduced into a water-gas producer, is heated to such a temperature that the oil begins to crack and deposit carbon, but sufficient steam remains undecomposed to interact later with the deposited carbon. The heating takes place in a chamber below the coke layer in the producer, the chamber being provided with fireclay checkerwork and heated from above by the glowing coke.—German Patent No. 413,741.

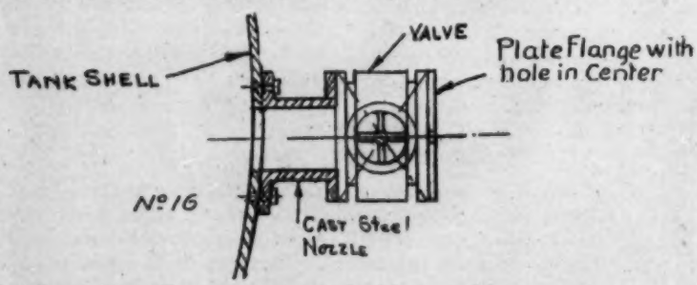
GAS WRINKLES

Removing Tar from Relief Holder

Wrinkle No. 16

IF you have ever attempted to pump a viscous or semi-fluid mass, such as oil gas tar mixed with a certain proportion of lamp-black, by means of a suction pipe over the top of a tank, perhaps you will come to the conclusion later that you had better get a rope and bucket.

We came to the same conclusion when attempting to remove an accumulation of tar from a large relief holder. Finally it was decided to install a 10-inch nozzle opening on side near the bottom of the tank. The bottom sheet was of ⅞-inch tank steel



and would well support a nozzle of extra heavy cast steel.

A nozzle to fit the radius of the shell was designed by us and cast by a local steel foundry. Studs for holding the nozzle in place were first fitted by drilling and tapping holes to such a depth that they did not go quite through the sheet. The nozzle was then put in place, fitted to the surface of the tank shell and the exact inside opening marked off. The nozzle was then removed and a groove cut by means of air tools just inside the marked line. This was made to such a depth that the sheet was not quite penetrated. A gasket was then put on and the fitting tightly drawn into place by the nuts of the stud bolts.

The valve was then bolted to the outside of the nozzle and equipped with a blind flange with a hole in the center slightly larger than the round shaft of a long chisel bar. With the valve open it was then only necessary to cut the remaining metal from the bottom of the groove, the chisel being guided into the groove by the sides of the fitting. A small portion of the metal was left at the bottom portion of the arc. The chisel was now removed and a round bar put through the hole in the blind flange. The plate cut out being forced back and down into the tank. Rags were used as improvised packing between the shaft of the chisel bar and the hole in the plate. The valve was then closed and connection was ready.

AIDING THE SMALL GAS MAN

(Continued from page 269)

This aggressive campaign, covering many features of advertising of every character, with special and specific literature mailed direct to each prospect, and various other methods of stimulating sales of appliances to these potential consumers, is extremely interesting, and their efforts are already showing splendid results. Their continued campaign will be watched with much interest.

A Widely Prevalent Condition

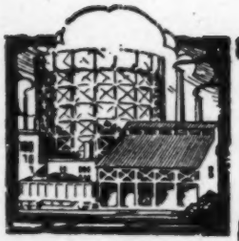
It is very probable that this same situation exists with every gas company, not only in the South, but in the United States, and that while many of them are probably selling securities for financing necessary new business extensions, they are overlooking the fact that there is at present unlimited potential business along the lines of their present mains. It is our hope that each one in attendance at this meeting will gather some helpful information that will enable him to make a careful check-up or survey of his own property, and ascertain and develop some of the latent business awaiting his solicitation and acquisition, because there is an unlimited amount of additional business that can be secured on your present mains.

Many of the manufacturers of gas ranges, water heaters, heating and laundry stoves, and those of every type and kind of industrial appliances, stand ready to assist any progressive company in conducting any kind of a sales campaign. They will mail out a series of illustrated selling letters to any selected list of special prospects. The manufacturers are ever willing and ready to assist any and every one of us to reach those special prospective consumers and that particular class of business, apparently available, which we are striving to secure. Their intelligent and conscientious co-operation is awaiting your call.

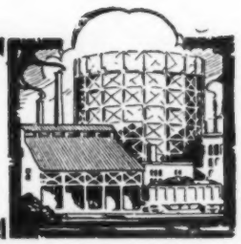
Educational Features Fostered by the Association

There are, however, two worth-while activities of our association, reports upon which will be briefed, but which I wish to mention now. First, the School of Gas Engineering at Johns Hopkins, which is financed by the Southern Gas Association, and which is, indeed, a credit to our association and every one who is contributing towards its support. This interesting report will be presented, in detail, on the 17th.

I wish to mention, also, the short report covering the second annual Gas Meter Lecture Course of the Southern Gas Association, which was conducted in Atlanta, in August, 1925. This was, indeed, a most instructive and helpful course to the many who were privileged to attend its sessions, and the association feels most grateful to those who contributed their time, equipment, men and means to make it such a pronounced success.



NEWS OF THE GAS INDUSTRY



Illinois Gas Men Meet at Springfield

Gather at Shrine of Lincoln

NEIL C. ALBIN

"Public sentiment is everything—with public sentiment nothing can fail, without it, nothing can succeed. Consequently, he who knows public sentiment goes deeper than he who enacts statutes of pronouncing decisions."—A. Lincoln.

The 22nd annual meeting of the Illinois Gas Association was held in Springfield, Illinois, March 17th and 18th in joint session with the 25th annual meeting (Silver Anniversary) of the Illinois State Electrical Association and the 17th annual meeting of the Illinois Electric Railways Association. This was the sixth joint convention of the association and was the first time in twenty-five years that it has been held outside of Chicago.

The meeting of the gas section was held at the Leland Hotel, the electric section at the St. Nicholas Hotel and the railway section at the Hotel Abraham Lincoln.

Springfield Selected for Meeting

The selection of Springfield for the 1926 joint convention was in response to a great many requests by engineers and managers in Chicago and other cities. Springfield is, perhaps, the greatest public utility center of any city of comparable size in the United States. It also offers many places of interest of a historical nature, being the old home of Abraham Lincoln, and it is here that he is buried. The shrine is visited by thousands of people each year from every corner of the world. Many in attendance took advantage of this fact and visited these places of interest.

The attendance for the two days greatly exceeded expectations and next to the annual meeting of the American Gas Association, the Illinois Joint Convention perhaps ranks second in the number of attendance. It was announced that there were about one thousand public utility executives present.

1926 a Banner Year for Gas in Illinois

Informal interviews with gas men indicated that the year 1926 would be a banner year in the history of the gas industry in Illinois. It was developed further that the industrial gas load and the house heating load, if developed to their fullest extent, would have the tendency to straighten out the load curve which would materially effect better operation of the properties, and by so doing the public would ultimately be benefited. The development of these loads, together with a great amount of work expended on public relations, would result in the supreme satisfaction of knowing that the accomplishments will certainly have its effect on the community served, leaders declared.

As in former years, joint sessions were held on each morning of the two days. This feature was beneficial as all talks, addresses, reports and papers presented at these morning sessions dealt with important facts pertaining to the public utility industry as a whole.

Wednesday Joint Session

The Wednesday morning joint session was opened by an address by J. Paul Clayton, president of the Illinois State Electrical Association. To save time, Mr. Clayton spoke for the three associations. His address, in part, relative to the Illinois Gas Association, is as follows:

"The development of industrial gas business has been still more successful and many of the gas utilities are now furnishing gas for house-heating, and have secured very good results from this new field.

"New and more efficient methods are being developed for the production of gas, colleges are establishing gas engineering courses; securities are daily being absorbed with confidence by the investing public; gas consumption is increasing rapidly, due largely to industrial gas consumption and house heating.

"We of the gas industry must educate ourselves and our employees to handle these changing conditions. Research work must be carried on and exact knowledge of gas and its possibilities obtained if the gas industry is to take full advantage of its industrial possibilities. Many recognize the necessity of educational work and good will advertising, but all of us should get behind this program.

"During the year progress has been made in every branch of the gas business, but to my mind no accomplishment stands out so great as the progress we have made in selling ourselves and the investing public as to the future possibilities of the gas industry."

Following Mr. Clayton, addresses were made by J. E. Davidson, president, National Electric Light Association, Omaha, Nebraska; Lucius S. Storrs, managing director, American Electric Railway Association, New York; and Alexander Forward, secretary, manager, American Gas Association, New York.

Major Forward's Address

Mr. Forward's address, entitled "What the Gas Industry Is Doing," dealt with the future possibilities of manufactured gas. He pointed out that the project of heating the nation's homes, schools, etc., with gas was the coming load and therein lies the greatest opportunity for expansion. Mr. Forward also said: "There has been an increase of 63½ per cent in six years in the use of gas for in-

dustrial purposes. The significance of this increase is apparent to gas men inasmuch as the use of gas in manufacturing is a comparatively recent development."

Information Committee Work

The Thursday morning joint session pertained solely to the activities of the work now being carried on by the Illinois Committee on Public Utility Information and its affiliated organization, Public Service Speakers' Bureau. John F. Gilcrist, chairman of the Illinois Committee and vice-president of the Commonwealth Edison Company, Chicago, presided over this session and also gave a talk on "Summary of Year's Activities, History and Purpose of Committee." In the afternoons, the separate associations convened for business and discussed subjects along their own respective lines.

The entertainment features of the convention did not correspond to those of former years. The annual banquet was not held, the entertainment being motion pictures of the industry in the ballroom of the Leland Hotel on the first evening of the convention, and a theaatre party the evening of the last day of the convention.

Advertising and Advertising Art

Advertising and advertising art was one of the big features of the convention. Some of the most successful ads and posters of Illinois' public utility companies were displayed in the palm room at the Hotel Abraham Lincoln.

The gas section convened Wednesday and Thursday afternoon at the Leland Hotel and was presided over on Wednesday by R. E. Chew, president of the Illinois Gas Association and on Thursday by W. A. Bertke, vice-president of the Illinois Gas Association. The papers presented at these sessions were all of great value and consisted of various topics pertaining to the gas industry. The discussions that followed the reading of such well-chosen papers was taken part in by many prominent gas men from different sections of the state. The discussion showed that Illinois gas men are awake to the possibilities of the house heating business, and this, together with intensive work of further developing the industrial business, will help to solve the problem of operating their properties at maximum capacity and efficiency.

Papers at Gas Sessions

The papers given at the gas session for both days are as follows:

"Public Contact in Everyday Business." John Moore, The Peoples Gas Light and Coke Company, Chicago, Illinois.

"Industrial Gas Sales Promotion." T. V. Purcell, vice-president, The Peoples Gas Light and Coke Company, Chicago, Illinois.

"Accounting Section Activities—American Gas Association." C. J. Hill, Chicago, Illinois.

"Gas House Heating in Small Communities." William Burrell, industrial gas engineer, Central Illinois Public Service Company, Springfield, Illinois.

"The Gas Distribution System." A. H. Link, superintendent of transmission, The Peoples Gas Light and Coke Company, Chicago, Illinois.

"What Home Service Will Do for Your Company." Mrs. Anna J. Peterson, director Home Service Department, The Peoples Gas Light and Coke Company, Chicago.

"Operating Without a B.t.u. Standard." George Wehrle, superintendent, Gas Department, Public Service Company of Colorado, Denver.

"Commercial Section Activities, American Gas Association." R. J. Canniff, chairman, Commercial Section, A. G. A., Poughkeepsie, N. Y.

"Some Characteristics of Gas Combustion." O. L. Kowalke, professor of chemical engineering, University of Wisconsin, Madison.

"Report of Committee on Co-operation with University of Illinois." A. B. Greenleaf, chairman, Chicago.

Resume of Papers

The papers read at the gas sessions, as has been mentioned before, sounded keynotes of the Middle West's gas industry. T. V. Purcell's, vice-president of the Peoples Gas Light and Coke Company, paper on "Industrial Gas Sales Promotion" was especially important. He said that to increase industrial gas sales, more research work must be done relative to the rates governing indus-

Illinois Utility Men at Their Annual Convention

trial sales. Mr. Moore's, of The Peoples Gas Light and Coke Company, paper on "Public Contact in Everyday Business" carried with it a sermon on the selection and training of employees in gas offices to satisfy disgruntled customers. George Wehrle's paper on "Operating Without a B.t.u. Standard" gave a resume of results obtained by the Public Service Company of Denver, Colorado, in the gradual reduction in B.t.u. from 527 B.t.u. in 1920 to 400 B.t.u. in 1925.

House Heating in Small Communities

William Burrell of the Central Illinois Public Service Company read a paper on "Gas House Heating in Small Communities," pointing out the remarkable growth of this phase of the industry over the past eighteen months.

A. H. Link, superintendent of transmission for The Peoples Gas Light and Coke Company, gave in detail the necessary steps to be taken in building up a small holder pressure distribution system to meet the growing demands of the community served.

On Thursday afternoon Mrs. Anna J. Peterson, director of the Home Service Department of The Peoples Gas Light and Coke Company, made a strong plea for the organization of home service departments in gas companies of the Middle West.

Mr. A. B. Greenleaf, also of The Peoples Gas Light and Coke Company, made the report of what the association's committee was doing in co-operation with the University of Illinois.

Professor O. L. Kowalke of the University of Wisconsin, delivered an address on gas burners and other characteristics of gas combustion.

Work of Commercial Section

Mr. R. J. Canniff of the commercial section, American Gas Association, told of the campaigns being carried on now and backed by the association of educating the people through various agencies, the benefits to be obtained by the increased use of gas for refrigeration, house heating, cooling, etc.

The new officers for the ensuing year of the Illinois Gas Association are as follows:

W. A. Bertke, president, Illinois Power and Light Corporation.

Paul D. Warren, vice-president, Peoples Gas Light and Coke Company.

R. V. Prather, secretary and treasurer.

Board of directors—F. F. Cauley, Charles W. Bradley, H. S. Whipple, R. E. Chew, R. B. MacDonald, J. E. Johnson, B. J. Mullaney, R. S. Wallace, R. V. Prather.

* * *

Home Life Gaining, Gas Sales Show

Hartford, Conn.—Statistics of the Connecticut Committee on Public Service Information show a tremendous increase in gas consumption for cooking and house heating purposes, which was chiefly responsible for the 2.5 per cent increase of gas sales throughout the state during the year 1925, the committee says.

People are staying at home more and more, is the conclusion drawn from the fact that, although gas sales increased 2.5 per cent during the year, the number of gas meters installed showed an increase of but 1.8 per cent. This, the committee reports, shows that the greater part of the increased gas sales developed rather from a larger use of gas than from extension of service.

The statistics show that virtually every person in the state is served by gas in one way or another, for while the population of the state is about a million and a half, the number of people served by gas in Connecticut now numbers 1,341,840. Gas service, the committee says, was extended to about 23,725 additional people in Connecticut in 1925.

* * *

To Mark Gas Tanks as an Aid to Aviators

Denver, Colo.—The Public Service Company of Denver are contemplating the placing of a large white arrow to be placed on their gas tanks as an aid to aviators who may land at the fields in East Denver and these tanks will be flooded with light during the night hours. This is to help in the Colorado mail service.

...field, Illinois, March 17 and 18, 1926

Southern Gas Men Assemble in New Orleans

A Program of Special Interest to Small Companies Presented

The eighteenth annual meeting of the Southern Gas Association was held at the Roosevelt Hotel, New Orleans, Louisiana, March 15th, 16th and 17th. The president, Mr. S. E. Linton, presided and in his remarks he pointed out the value to every gas company of having a thorough survey made of the territory served to find out just how many appliances are in use in the homes having gas service. He stated that in such a survey in a Southern city, it was found that not more than 50% of the possibles sales of domestic appliances had been made. He stated that under such conditions the overhead charges were already taken care of, so that the additional gas used in these houses would yield a large percentage of profit.

Mr. H. C. Abell, president of the American Gas Association, prepared a paper, but was unable to be present, and it was read by Mr. Flowers, general manager of the New Orleans Gas Light Co. Mr. Abell's paper outlined the various activities of the American Gas Association and told of the great increase in the use of gas for industrial and domestic uses.

Mr. J. P. Connolly, secretary-treasurer of the Southern Gas Association, stated that the present membership totaled 382. There were about 200 registered at the meeting.

Special Program for Small Companies

The program of papers was specially arranged to be of special interest to the men in charge of the smaller gas companies. The first paper was presented by H. C. Gross, Pensacola, Florida, on "Modernizing the Small Gas Works." Mr. Gross covered every phase of the operation of a plant and pointed out how by the expenditure of a small amount of money the efficiency of the plant could be largely increased. This paper will be printed in full in an early issue of the American Gas Journal.

S. W. Brown *S. E. Linton* *A. E. Merchant*

Members of Southern Gas Association

Heads of three public utility information bureaus in Southern states discussed the need for friendship between the utilities and the general public. They were Channing Cope, director of the speakers' bureau, utilities information committee of Georgia; Dr. Hugh M. Blain, director of the Louisiana-Mississippi committee on public utility information, and S. E. Boney, director of the North and South Carolina bureau, whose paper was read by George Newbern, Mr. Boney being unable to attend the convention.

A Sight Seeing Tour

The entertainment features of the first day consisted of a sight-seeing tour of the old French part of the city and a buffet supper dance at the hotel in the evening.

The first paper presented at the second day's meeting was entitled "Home Service and its Effect on Our Future Business," by Mrs. S. R. Dull, head of the Home Service Dept. of the Georgia Railway & Power Co., Atlanta, Georgia. She stated that "No matter how well you or your company think of the Home Service Dept., you have not put it over unless the housewives of your community are of the same opinion." Again she stated that "when a woman succeeds in cooking, she will cook twice as much," which means additional consumption of gas. She ended her paper by stating that "if Service is such a big word, and if Home is such a big word, then the combination HOME SERVICE is one of the biggest words I know."

Selling Appliances

The next paper "Selling Appliances" was prepared by Mr. William F. Eve, Jr., new business manager of the Gas Light Company of Augusta, Ga. Many sales plans were described for the sale of domestic gas appliances. He described the various kinds of advertising and other methods used in putting over special sales of various appliances. Their sales in 1925 were 720 gas ranges, 509 water heaters and 272 room heaters.

Methods of selling water heaters had a prominent part in the program. A paper, "How, When and Where to Sell Circulating Gas Water Heaters," was read by Mr. E. D. Brewer, Atlanta Gas Co., Atlanta, Ga. Another paper, "Water Heater Sales and Possibilities," was read by Mr. James W. Riser, Columbia, S. C. He stated that his company had sold more automatic instantaneous gas water heaters in proportion to the number of gas consumers not using water heaters, than any other city in the Southern states, during 1925. During that time the average sale of gas per meter was 45.471 cubic feet.

Another paper on "How, When and Where to Sell Automatic Instantaneous Water Heaters," was presented by C. I. Baker, Engineer of the Hoffman Heater Co., Louisville, Ky. It presented some new angles on the sale of instantaneous heaters.

"Getting the Most Out of the Territory Served," by A. Gordon King, American Gas Assn., New York, stressed the importance of a complete survey so that an intelligent selling plan can be mapped out.

The entertainment feature of the second day included a boat trip around the harbor.

Advertising Discussed

The Wednesday meeting started with a paper, "Advertising," by Herman A. Groth, Chicago, Ill.

A paper, "Rehabilitating the Small Gas Plant," was presented by Sam Brown, Florence, S. C., and was published completely in the March 20th issue of the American Gas Journal.

Mr. E. L. Rieha, presented a report on the Johns Hopkins School of Gas Engineering. It shows splendid progress, and will be published in full in the Journal.

An address by Mr. P. S. Arkwright, president Georgia Pr. & Lt. Co., Atlanta, Ga., on "Making Friends." This address will appear in full in a future issue of the American Gas Journal.

Only one member of the Southern Gas Assn. died last year. This was Col. George D. Roper, Rockford, Ill., and suitable resolutions were uanimously passed and placed in the records of the Assn.

Officers Elected

The officers elected for the coming year are as follows:

President—A. E. Merchant, genl. supt. New Orleans Pub. Service Co., New Orleans, Louisiana.

1st Vice-President—P. S. Arkwright, vice-president Georgia Ry. & Pr. Co., Atlanta, Ga.

2nd Vice-President—Ray A. Ziegler, vice-pres. and genl. mgr. Jacksonville Gas Co., Jacksonville, Fla.

Secretary-Treasurer—J. P. Connelly, comm. agent, Charleston Ry. & Lt. Co., Charleston, S. C.

The following directors were also elected:

F. H. Knapp, vice-pres. Standard Gas Equipment Corp., N. Y.

R. J. Hole, N. C. Pub. Serv. Co., Greensboro, N. C.

F. H. Matthes, vice-pres. Tidewater Pr. Co., Wilmington, N. C.

W. H. Taylor, Georgia Ry. & Pr. Co., Atlanta, Ga.

The next meeting will be held in Atlanta, Georgia, some time in April, 1927. The date is to be announced later.

Randal Morgan Passes Away

Randal Morgan, chairman Executive and Finance Committee of The United Gas Improvement Company, died at his home at Chestnut Hill, Philadelphia, on Saturday, March 20. He had been in ill health since December, but his condition was not thought serious until a few days before his death, when pneumonia developed.

Morgan, Randal, lawyer, was born in Philadelphia, October 18, 1853, son of Charles Eldridge and Jane Bowen (Buck) Morgan. Charles Eldridge Morgan, father of Randal Morgan, was a dry goods merchant of Philadelphia. The son received his preliminary education at Germantown Academy. He was graduated from the University of Pennsylvania in 1873 with the degree A.B., receiving the degree A.M. in 1876. After spending one year in the employ of the Lancaster (Pa.) Iron Works, Mr. Morgan decided to follow the legal profession. He began the study of law under the preceptorship of his elder brother, Charles E. Morgan, Jr., in Philadelphia; was admitted to the Pennsylvania bar in 1877, and, beginning the practice of his profession in Philadelphia as a member of his brother's firm, Morgan & Lewis, was successful from the outset, making a specialty of corporation law.

Randal Morgan

When in 1882 the legal business of The United Gas Improvement Company required the undivided attention of one individual, he was selected as its general counsel. He has ever since been connected with that company. In 1892 he was chosen vice-president while retaining the office of general counsel. Since 1923 Mr. Morgan had been chairman of the Executive and Finance Committee of The United Gas Improvement Company. He was a director in the Girard Trust Company of Philadelphia, the Western Saving Fund Society and the Philadelphia National Bank. Since 1896 he had been a trustee of the University of Pennsylvania. He was long chairman of the standing Committee on Finance and Property of that institution, and since 1922 he had been chairman of the Board of Trustees. He was a member of the American Bar Association, Pennsylvania State Bar Association, Philadelphia Bar Association and the Engineers, Rittenhouse, Union League, Philadelphia Cricket and University Clubs (Philadelphia); the University and Bankers' Clubs (New York), and the Oquossoc Angling Association (Indian Rock, Me.). He found his chief recreation in gardening and kindred occupations.

Mr. Morgan married June 17, 1880, Anna, daughter of Marshall Spring Shapleigh of Philadelphia; she died in 1905. He was married April 30, 1910, to Frances Biddle, daughter of Charles Williams of Haverford, Pa. He had three children by the first union: Marshal Shapleigh, assistant to the president of the Fidelity Trust Co., Philadelphia; Jane, now Lady Fisher of Kilverstone Hall, Thetford, England, and Randal Morgan, Jr., deceased.

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Brooklyn Union Gas Co. Holds Safety Meeting

In conjunction with the Brooklyn Safety Council, the Brooklyn Union Gas Co. system held a traffic safety meeting in the auditorium of the Columbus Council Building, Prospect Park Plaza. Clarence E. Spayd, secretary of the Brooklyn Safety Council, presided. Lt. John M. Finnerty, O.R.C., who has been connected with the New York Police Department in the regulation of traffic, and W. E. McGuirk, president of the Yellow Taxi Corporation, spoke.

CHARLES H. TENNEY A CANDIDATE FOR U. S. CHAMBER OF COMMERCE

Well Known Utility Man Well Qualified for Honor

Colonel Charles H. Tenney, one of the leaders in the public utility industry, has been proposed for election to the board of directors of the Chamber of Commerce of the United States of America to represent the First Election District (New England). The elections are held at the annual meeting of the national Chamber, which takes place this year at Washington, D. C., May 10 to 13.

Colonel Charles H. Tenney

Colonel Tenney, though still in his fifties, has for more than a quarter of a century been a directing force in public utility activities. He is chairman of the board of directors of Charles H. Tenney & Company and also of a score of gas and electric companies in New England, New York and New Jersey. Under his guidance these companies have been developed to a high state of efficiency. He knows public utilities—knows their value, their great possibilities, their problems, their needs—knows them as one only can know them who has played an important part in public utility history during the last twenty-five years.

He would, therefore, bring to the board of directors of the Chamber of Commerce of the United States of America a knowledge, a viewpoint, an understanding of great value to that powerful body.

Colonel Tenney's well-rounded experience in business and in public service fits him admirably for a place among the directors of the national Chamber of Commerce. In addition to his public utility interests, Colonel Tenney is directly concerned in banking, manufacturing, merchandising, hotel operation. He has already served on many boards and committees of national scope. Even his splendid military service—for which he received the Distinguished Service Medal—helped to produce in him that national viewpoint so essential to good service on the board of directors of the national Chamber of Commerce.

During the war Colonel Tenney was chief of finance of the Ordnance Department, served overseas at Tours and at Paris, continued in active service until June, 1919, and is now district chief, Boston Ordnance District. Under his direction the industries of this district—which comprises Maine, New Hampshire, Vermont, Eastern Massachusetts and Rhode Island—have been organized and co-ordinated for immediate production of military supplies in case of war.

As chief of finance of the Ordnance Department, and especially as district chief in charge of industrial preparedness in this section, Colonel Tenney has had to make a most careful survey of American business, to study the relationship of one industry with another, of one section of the country with other sections—to perceive the advantages and the opportunities, the problems and the needs of the various industries and the various sections. His viewpoint is national; he sees the business of the country as a whole.

The public utility industry may well take pride in offering to the nation's business the services of one of its leaders—one whose qualifications are so appropriate and so valuable.

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Guild of Gas Managers Elects Officers

At the annual meeting of the Guild of Gas Managers held in Boston on March 13, the following officers for 1926 and 1927 were elected:

President — Charles R. Prichard, Lynn, Mass.

Vice-president — Fred H. Sargent, Lawrence, Mass.

Treasurer—W. F. Norton, Nashua, N. H.

Secretary — Francis E. Drake, Lynn, Mass.

Equitable Gas Co. to Increase Gas Rates

Pittsburgh, Pa.—According to a statement filed with the Public Service Commission, the Equitable Gas Co. will increase existing rates on and after April 1. The summer rate is changed by increasing the rate for all gas in excess of 75,000,000 cubic feet per month from 33 cents per 1,000 cubic feet to 41 cents per 1,000 cubic feet, less a discount of 3 cents per 1,000 cubic feet for prompt payment of accounts.